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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of Ranganathan et al. Art Unit 3761
Serial No. 10/820,636
Filed April 8, 2004
Confirmation No. 8821
For DIFFERENTIALLY EXPANDING ABSORBENT STRUCTURE
Examiner Melanie Jo Hand

March 15, 2010

APPEAL BRIEF

Richard L. Bridge, Reg. No. 40,529
ARMSTRONG TEASDALE LLP
One Metropolitan Square, 26th Floor
St. Louis, Missouri 63102
(314) 621-5070

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APPEAL BRIEF

This is an appeal from the rejection of the claims of the above-referenced application made in the final Office action dated September 22, 2009. A Notice of Appeal was filed on January 15, 2010.

I. REAL PARTY IN INTEREST

The real party in interest in connection with the present appeal is Kimberly-Clark Worldwide, Inc. of 401 N. Lake Street, Neenah, Wisconsin 54957-0349, a corporation of the state of Delaware, owner of a 100 percent interest in the pending application.

II. RELATED APPEALS AND INTERFERENCES

Appellants are not aware of any pending appeals, which may be related to, directly affect or be directly affected by, or have a bearing on, the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1, 3, 7-15, 17-22 and 24-46 are currently pending in the application for consideration. Claims 2, 4-6, 16, and 23 have been cancelled. A copy of the claims involved in this appeal appears in the Claims Appendix of this Brief.

Claims 1, 3, 7-15, 17-22 and 24-46 stand rejected. The

rejections of claims 1, 3, 7-15, 17-22 and 24-46 are being appealed.

IV. STATUS OF AMENDMENTS

No amendments have been filed after the final rejection.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The following summary correlates claim elements to specific embodiments described in the application specification, but does not in any manner limit claim interpretation. Rather, the following summary is provided only to facilitate the Board's understanding of the subject matter of this appeal.

Claim 1 is directed to a single-layer absorbent structure 20, comprising a first surface 27 opposite a second surface 28, wherein the single-layer absorbent structure 20 lies flat in a dry state and expands along the second surface 28 in the presence of a liquid so that the first surface 27 increases concavity, and wherein a pocket-like shape is formed in the presence of the liquid. See, page 9, lines 18-26; page 10, lines 25-32; and Figures 1 and 2. The single-layer absorbent structure 20 expands to a lesser extent along the first surface 27 than the single-layer absorbent structure 20 expands along the second surface 28 in the presence of the liquid. See, page 10, lines 10-15 and Figures 2-5. The single-layer absorbent structure 20 has a fluid intake rate of about 0.5 cubic centimeters per second or greater, and the single-layer absorbent structure 20 has a thickness of about 10 millimeters or less in a dry state. See, page 9, lines 26-27 and page 10, lines 6-10.

Claim 17 is directed to an absorbent structure 20 positioned between a bodyside liner 142 and an outer cover 140,

the absorbent structure 20 comprising a first layer 22 that expands less than 10% in the presence of a liquid, wherein the first layer 22 is positioned adjacent the bodyside liner 142. See, page 14, lines 5-8; page 21, lines 14-21; and Figure 7. An absorbent second layer 24 comprises polyurethane foam and has a basis weight between about 100 and about 1000 grams per square meter and is bonded to the first layer 22. See, page 14, lines 11-17; page 12, lines 11-12; and Figures 1-5. The absorbent second layer 24 expands at least 20% in the presence of the liquid so that the second layer 24 increases concavity, and wherein a pocket-like shape is formed along an interface of the first and second layers 22, 24 in the presence of the liquid. See, page 10, lines 25-32; page 14, lines 7-10; and Figures 1-5. The absorbent second layer 24 is positioned adjacent the outer cover 140 and the absorbent structure 20 has a fluid intake rate of about 0.5 cubic centimeters per second or greater. See, page 10, lines 6-10; page 21, lines 14-21; and Figure 7.

Claim 30 is directed to an absorbent article 120 comprising a body side liner 142, an outer cover 140, and an absorbent structure 20 comprising polyurethane foam and having a basis weight between about 50 and about 1000 grams per square meter positioned between the body side liner 142 and the outer cover 140. See, page 12, lines 11-12; page 21, lines 14-21; and Figure 7. The absorbent structure 20 includes a first surface 27 opposite a second surface 28, the second surface 28 of the absorbent structure 20 is bonded to the outer cover 140. See, page 21, lines 15-19; page 9, lines 18-26; and Figures 1-5 and 7. The absorbent structure 20 expands along the second surface 27 in the presence of a liquid so that the first layer 22 increases concavity, wherein a pocket-like shape is formed in the presence of the liquid. See, page 10, lines 25-32 and

Figures 2-5. The absorbent structure 20 expands to a lesser extent along the first surface 27 than the absorbent structure 20 expands along the second surface 28 in the presence of the liquid, and the absorbent structure has a fluid intake rate of at least about 0.5 cubic centimeters per second or greater. See, page 10, lines 6-15 and Figures 2-5.

Claim 41 is directed to a single-layer absorbent structure 20 comprising a first surface 27 opposite a second surface 28, wherein the absorbent structure 20 lies flat in a dry state and expands along the second surface 28 in the presence of a liquid so that the first surface 27 increases concavity and wherein a pocket-like shape is formed in the presence of the liquid. See, page 9, lines 18-26; page 10, lines 25-32; and Figures 1 and 2. The single-layer absorbent structure 20 expands to a lesser extent along the first surface 27 than the single-layer absorbent structure 20 expands along the second surface 28 in the presence of the liquid, and the single-layer absorbent structure has a fluid intake rate of about 0.5 cubic centimeters per second or greater. See, page 10, lines 6-15 and Figures 2-5. At least one of the first and second surfaces 27, 28 undergoes anisotropic expansion in the presence of the liquid. See, page 10, lines 16-19.

Claim 42 is directed to an absorbent structure 20 comprising a first layer 22 having a basis weight between about 10 and about 150 grams per square meter that expands less than 10% in the presence of a liquid and an absorbent second layer 24 comprising polyurethane foam and is bonded to the first layer 22. See, page 14, lines 5-13; page 16, lines 19-21; and Figure 1. The absorbent second layer 24 lies flat in a dry state. See, page 9, lines 18-21 and Figure 1. The absorbent second layer 24 expands at least 20% in the presence of the liquid so that the second layer 24 increases concavity, wherein

a pocket-like shape is formed along an interface of the first and second layers in the presence of the liquid, and the absorbent structure has a fluid intake rate of about 0.5 cubic centimeters per second or greater measured using the Fluid Intake Rate Test. See, page 10, lines 5-8 and 25-32; and page 14, lines 6-10; and Figures 2-5.

Claim 43 is directed to an absorbent structure 20 comprising a first layer 22 that expands less than 10% in the presence of a liquid and an absorbent second layer 24 comprising polyurethane foam and bonded to the first layer 22. See, page 9, lines 18-20; page 14 lines 6-10; page 16, lines 19-21; and Figures 1-5. The absorbent second layer 24 lies flat in a dry state. See, page 9, lines 18-21 and Figure 1. The absorbent second layer 24 expands at least 20% in the presence of the liquid so that the second layer 24 increases concavity, wherein a pocket-like shape is formed along an interface of the first and second layers 22, 24 in the presence of the liquid, the absorbent structure has a fluid intake rate of about 0.5 cubic centimeters per second or greater. See, page 10, lines 5-8 and 25-32; and page 14, lines 6-10; and Figures 2-5. Only one of the first and second layers is elastomeric. See, page 14, lines 24-28.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Appellants appeal the rejections of claims 1, 3, 9, 13-15, and 41 under 35 U.S.C. §102(b) as being anticipated by Japan Patent Application Publication No. 2003-033381 (Suzuki et al.).

B. Appellants appeal the rejections of claims 1, 3, 9, 13-15, and 41 under 35 U.S.C. §103(a) as being unpatentable over Suzuki et al.

C. Appellants appeal the rejections of claims 7, 8, and 10 under 35 U.S.C. §103(a) as being unpatentable over Suzuki et al.

D. Appellants appeal the rejections of claims 11 and 12 under 35 U.S.C. §103(a) as being patentable over Suzuki et al. in view of European Patent Application Publication No. 0804915 (Carlucci et al.).

E. Appellants appeal the rejections of claims 17-22, 24-26, 28-36, 38-40, and 42-46 under 35 U.S.C. §103(a) as being unpatentable over Suzuki et al. in view of U.S. Patent No. 6,667,424 (Hamilton et al.).

F. Appellants appeal the rejection of claims 27 and 37 under 35 U.S.C. §103(a) as being unpatentable over Suzuki et al. in view of Hamilton et al. and further in view of Carlucci et al.

VII. ARGUMENT

A. Claims 1, 3, 9, 13-15, and 41 is submitted to be unanticipated by and patentable over Japan Patent Application Publication No. 2003-033381 (Suzuki et al.).

Claims 1, 3, 9, and 13-15

Claim 1 is directed to a single-layer absorbent structure that comprises:

a first surface opposite a second surface, wherein the single-layer absorbent structure lies flat in a dry state and expands along the second surface in the presence of a liquid so that the first surface increases concavity, wherein a pocket-like shape is formed in the presence of the liquid, the single-layer absorbent structure expands to a lesser extent along the first surface than the single-layer absorbent structure expands along the second surface in the presence of the liquid, the single-layer absorbent structure has a fluid intake rate of about 0.5 cubic centimeters per second or greater, and the single-layer absorbent structure has a thickness of about 10 millimeters or less in a dry state.

Claim 1 is submitted to be unanticipated by Suzuki et al. in that the reference fails to teach a single-layer absorbent article that lies flat in a dry state and expands along a second surface in the presence of a liquid so that an opposite first surface increases concavity.

As a first matter, Appellants respectfully submit that reliance on the machine translation of Suzuki et al. is improper. M.P.E.P §706.02 II requires that:

> [t]o determine whether both the abstract and the underlying document are prior art, a copy of the

> underlying document must be obtained and analyzed. If the document is in a language other than English and the examiner seeks to rely on that document, a translation **must be** obtained so that the record is clear as to the precise facts the examiner is relying upon in support of the rejection. Emphasis added.

The machine translation of Suzuki et al. is unclear and difficult to comprehend. A copy of the machine translation is provided in the Evidence Appendix. In fact, the machine translation of Suzuki et al. provided by the JPO (and relied on by the Office) prefaces the translation by stating "[t]his document has been translated by computer. So the translation may not reflect the original precisely." Reliance on the machine translation of Suzuki et al. in the rejection is thus improper. It is unclear from the machine translation which parts of the disclosure the Office is relying upon in its rejection.

As best understood by Appellants, Suzuki et al. is directed to a sheet-like absorption body having recessed and protruding parts and a self three-dimensionalizing function, which forms the recessed and protruding parts having a 2A mm step between the recessed and protruding parts. After absorbing water, when the step between the recessed and protruded parts is A mm when in a dry state. Specifically, the absorption body includes a P sheet made from nonwoven fabrics, cotton fabrics, and the like bonded to a Q sheet made from a nonwoven fabric. In one embodiment, the P sheet further includes superabsorbent polymers. Upon being wetted with water, the P sheet expands, thereby forming a concavo-convex structure.

Notably, however, with respect to claim 1, Suzuki et al. fail to disclose an absorbent structure that lies flat when in a dry state.

Specifically, as used in the instant specification, the absorbent structure is a flat planar material in the dry state[1]. Furthermore, as defined by Merriam-Webster, "flat" refers to a material that has "a continuous horizontal surface; being or characterized by a horizontal line or tracing without peaks or depressions (emphasis added); having a relatively smooth or even surface."[2] Furthermore, "planar" is defined as "of, relating to, or lying in a plane; two-dimensional in quality"[3], and "plane" is defined as "a surface in which if any two points are chosen a straight line joining them lies wholly in that surface."[4]

By contrast, however, as shown in the Drawings, the P sheet in Suzuki et al. has one or more crevices (i.e., peaks and or depressions) and consequently does not lie flat in the dry state[5]. Quite to the contrary, the P sheet of Suzuki et al. and the crevices formed therein, which are formed by standing/folding the ends of the P sheet and Q sheet up in the vertical direction (*see, e.g.*, Drawings 8 and 10), or by joining the P sheet and Q sheet intermittently (*see, e.g.*, Drawings 6 and 12). As such, Suzuki et al. fail to teach each and every element of Appellants' claimed invention, and thus, cannot be said to anticipate Appellants' claim 1 under 35 U.S.C. §102(b).

The Office relies on Drawing 10 of Suzuki et al. as purportedly teaching that the absorbent structure lies flat in a dry state. However, Drawing 10 of Suzuki et al. teaches a folded article that does not lie flat in a dry state. Quite to the contrary, two visible folds are shown in Drawing 10 and

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[1] *See, e.g.*, paragraphs [0001] and [0048] of the published application.
[2] Merriam-Webster Online, available at http://www.merriam-webster.com/dictionary/flat.
[3] *Id.*, available at http://www.merriam-webster.com/dictionary/planar.
[4] *Id.*, available at http://www.merriam-webster.com/dictionary/plane.
[5] *See, e.g.*, Suzuki et al. at Drawings 2, 4, 6, 8, 10, and 12.

referred to in Suzuki et al. as "another example of formation of a crevice and heights in the sheet-like absorber of this invention."[6]

The Office contends at page 2 of the final Office action "that it is clear from Fig. 10 of Suzuki that the article with folded walls is planar and thus lies flat in a dry state." Appellants respectfully disagree. As discussed above, "planar" is defined as "of, relating to, or lying in a plane; two-dimensional in quality."[7] The folding of the walls of Suzuki et al. results in the structure not being planar because of the increased-height of the folded portions of the walls with respect to the rest of the structure. The folded portions of the walls lie outside of the plane of the rest of the structure and the structure is thus not properly characterized as planar. Accordingly, Drawing 10 of Suzuki et al. fails to show an article that lies flat in a dry state, and instead shows an article having the exact opposite features – an article that has crevices and heights in a dry state and thus does not lie flat.

Moreover, the Office goes on to assert that "[a]pplicant clearly concurs with the examiner's position that a planar structure is equivalent in meaning to 'lying flat' as applicant equates the two concepts in the remarks at page 16." Appellants do not concur with the Office's position. As described above, "planar" and "flat" are distinct terms having corresponding distinct definitions. Appellants have in no way proposed that the two are equivalent in meaning. Rather, Appellants recognize that a flat surface is planar. A series of peaks, however, may lie in the same plane, and thus the peaks are planar, but the topography is certainly not flat.

[6] *See*, paragraph 53 and Drawing 10.
[7] *Id.*, available at http://www.merriam-webster.com/dictionary/planar.

For all of the above reasons, Appellants submit that claim 1 is unanticipated by and patentable over the reference of record.

Claims 3, 9, and 13-15 depend directly or indirectly from claim 1 and are submitted to patentable over Suzuki et al for the same reasons as claim 1.

Claim 41

Claim 41 is directed to a single-layer absorbent structure comprising:

a first surface opposite a second surface, wherein the absorbent structure lies flat in a dry state and expands along the second surface in the presence of a liquid so that the first surface increases concavity, wherein a pocket-like shape is formed in the presence of the liquid, the single-layer absorbent structure expands to a lesser extent along the first surface than the single-layer absorbent structure expands along the second surface in the presence of the liquid, the single-layer absorbent structure has a fluid intake rate of about 0.5 cubic centimeters per second or greater, and at least one of the first and second surfaces undergoes anisotropic expansion in the presence of the liquid.

Claim 41 is submitted to be unanticipated by and patentable over Suzuki et al. for substantially the same reasons as claim 1. That is, Suzuki et al. fail to teach a single-layer absorbent article that lies flat in a dry state and expands along a second surface in the presence of a liquid so that an opposite first surface increases concavity.

B. Claims 1, 3, 9, 13-15, and 41 are submitted to be nonobvious in view of and patentable over Suzuki et al.

Claims 1, 3, 9, and 13-15

Claim 1 is recited above. Claim 1 is submitted to be nonobvious in view of Suzuki et al. in that the reference fails to teach or suggest a single-layer absorbent article that lies flat in a dry state and expands along a second surface in the presence of a liquid so that an opposite first surface increases concavity.

Contrary to the Office's assertion, it would not have been obvious to modify Suzuki et al. to arrive at an absorbent structure that lies flat in the dry state as recited in Appellants' claim 1. Specifically, as noted above, nowhere in Suzuki et al. is it taught or suggested to form a flat, (e.g., planar) sheet-like absorbent structure. More particularly, as suggested in Suzuki et al., the crevice and height arrangement (even the dry state) functions as an anti-leak barrier for preventing leakage from the edge of the absorbent product upon wetting, and thus, Suzuki et al. actually teaches away from using a flat, planar absorbent structure even in the dry state. For example, as shown in Drawing 10 of Suzuki et al., the height portions of the absorbent structure function as anti-leak barrier to prevent leakage from the edge. By modifying Suzuki et al. to lie substantially flat (i.e., eliminating the height portion), the anti-leak barrier function of the absorbent structure would be destroyed and thus render Suzuki et al. unfit for its intended purpose.

Accordingly, Appellants submit that claim 1 is nonobvious in view of and patentable over Suzuki et al.

Claims 3, 9, and 13-15 depend directly or indirectly from

claim 1 and are submitted to patentable over Suzuki et al for the same reasons as claim 1.

Claim 41

Claim 41 is recited above and is submitted to be nonobvious in view of and patentable over Suzuki et al. for substantially the same reasons as claim 1. That is, Suzuki et al. fail to teach or suggest a single-layer absorbent article that lies flat in a dry state and expands along a second surface in the presence of a liquid so that an opposite first surface increases concavity.

For all of the above reasons, Appellants submit that claim 41 is nonobvious in view of and patentable over the Suzuki et al.

C. Claims 7, 8, and 10 are submitted to be nonobvious in view of and patentable over Suzuki et al.

Claims 7

Claim 7 depends from claim 1 and recites that the single-layer absorbent structure has a subtended angle of about 180 degrees or less in the presence of a liquid. Claim 7 is submitted to be nonobvious in view of patentable over Suzuki et al. for at least the same reasons as claim 1 based on its dependency therefrom.

Claim 8

Claim 8 depends from claim 1 and recites that the single-layer absorbent structure has a radius of curvature of about 38 centimeters or less in the presence of a liquid. Claim 8 is submitted to be nonobvious in view of and patentable over Suzuki et al. for at least the same reasons as claim 1 based on

its dependency therefrom.

Claim 10

Claim 10 depends from claim 1 and further recites that the first surface is treated to expand less in the presence of a liquid relative to the extent to which the second surface expands in the presence of a liquid. Claim 10 is submitted to be nonobvious in view of patentable over Suzuki et al. for at least the same reasons as claim 1 based on its dependency therefrom.

D. Claims 11 and 12 are submitted to be nonobvious in view of and patentable over Suzuki et al. in view of European Patent Application Publication No. 00804915 (Carlucci et al.).

Claim 11

Claim 11 depends from claim 1 and recites that the first surface is treated by at least one of the group consisting of necking, creping, pleating, aperturing, and mechanical teasing. Claim 11 is submitted to be nonobvious in view of and patentable over Suzuki et al. in view of Carlucci et al. for at least the same reasons as claim 1 based on its dependency therefrom.

Claim 12

Claim 12 depends from 1 and recites that at least one of the first and second surfaces comprises at least one slit to control shaping. Claim 12 is submitted to be nonobvious in view of and patentable over Suzuki et al. in view of Carlucci et al. for at least the same reasons as claim 1 based on its dependency therefrom.

E. Claims 17-22, 24-26, 28-36, 38-40, and 42-46 are submitted to be nonobvious in view of and patentable over Suzuki et al. in view of U.S. Patent No. 6,667,424 (Hamilton et al.).

Claims 17-22, 24-29 and 44

Claim 17 is directed to an absorbent structure positioned between a bodyside liner and an outer cover, the absorbent structure comprising:

a first layer that expands less than 10% in the presence of a liquid, wherein the first layer is positioned adjacent the bodyside liner; and

an absorbent second layer comprising polyurethane foam and having a basis weight between about 100 and about 1000 grams per square meter bonded to the first layer, wherein the absorbent second layer expands at least 20% in the presence of the liquid so that the second layer increases concavity, wherein a pock-like shape is formed along an interface of the first and second layers in the presence of the liquid, wherein the absorbent second layer is positioned adjacent the outer cover, and the absorbent structure has a fluid intake rate of about 0.5 cubic centimeters per second or greater.

Claim 17 is submitted to be nonobvious in view of and patentable over Suzuki et al. and U.S. Patent No. 6,667,424 (Hamilton et al.), in that whether considered alone or in combination the references fail to teach or suggest an absorbent structure having a first layer positioned adjacent a bodyside liner, an absorbent second layer comprising polyurethane foam positioned adjacent an outer cover, and wherein the absorbent second layer expands at least 20% in the presence of liquid so that the second layer increases concavity

and wherein a pocket-like shape is formed along an interface of the first and second layers in the presence of liquid.

Hamilton et al. is generally directed to absorbent articles comprising fibrous nits and other free-flowing particles. An absorbent article of Hamilton et al. includes free-flowing particles in a central portion which, in conjunction with other absorbent members, provide improved body fit and fluid handling performance. Increased leakage control is provided by the combined effect of good intake and fluid handling performance of the fibrous nits coupled with a wicking barrier between the nits and longitudinal sides of the article. A central rising member can further enhance the topography of the article when compressed by urging the portion comprising nits to deflect vertically upward. Notably, Hamilton et al. is not relied upon to cure the deficiencies of Suzuki et al. described below and nor does it do so.

As discussed above, Suzuki et al. contains a P sheet bonded to a Q sheet. The P sheet faces the wearer of the article and the Q sheet is positioned opposite the P sheet and faces outward from the wearer. Upon coming into contact with liquids, the P sheet expands inward towards the wearer, and away from the Q sheet. In contrast to Suzuki et al., claim 17 recites an expanding absorbent structure having an expanding absorbent layer positioned adjacent the outer cover. The disclosure of Suzuki et al. thus teaches construction of an article that functions according to the exact opposite principle of claim 17 by requiring that body-facing P sheet expand upon contact with liquid.

The Office contends at page 3 of the final Office action that "[w]hile it is true that layer P is the layer which expands more, examiner did not find any distinction in the Suzuki specification or drawings dictating which side of the

article the structure is placed in would face a bodyside liner and which would face an outer cover." The Office goes on to assert that the P sheet and Q sheet are not shown in the drawings of Suzuki et al. Appellants respectfully disagree with both of the Office's positions and believe the Examiner's difficulty in understanding the disclosure of Suzuki et al. is a byproduct of the unclear and confusing machine translation of Suzuki et al. upon which the Examiner's rejection is based.

Suzuki et al. identifies the P sheet as reference numeral 6 and the Q sheet as reference numeral 7 throughout the specification[8]. Reference numerals 6 and 7 are shown throughout multiple drawings[9]. For example, drawing 15 shows that the P layer faces the wearer of the diaper and is inward of the Q layer. In other words, drawing 15 shows that the P sheet faces the wearer of the diaper and that the Q sheet is positioned opposite the P sheet and faces outward from the wearer.

Moreover, any modification of Suzuki et al. to teach the features of claim 17 would be improper. Such a modification of Suzuki et al. would frustrate the desired intent of Suzuki et al. by requiring that the outward facing Q sheet expand upon contact with liquids. Such expansion of the Q sheet would be in the direction away from the P sheet. As such, if the outward facing Q sheet were to expand upon such contact with liquids, the Q sheet would expand away from the wearer and fail to form a body-facing concavo-convex structure. For these reasons, claim 17 is submitted to be patentable over Suzuki et al. and Hamilton et al.

Claims 18-22, 24-26, 28, 29, and 44 depend directly or indirectly from claim 17 and are submitted to be patentable

[8] *See, e.g.,* Paragraph [0053]
[9] *See*, Drawings 6, 8, 10-12, 15, 18, and 20

over Suzuki et al. and Hamilton et al. for at least the same reasons as claim 17.

Claims 30-40 and 45

Claim 30 is directed to an absorbent article comprising:

a body side liner;

an outer cover; and

an absorbent structure comprising polyurethane foam and having a basis weight between about 50 and about 1000 grams per square meter positioned between the body side liner and the outer cover, wherein the absorbent structure includes a first surface opposite a second surface, the second surface of the absorbent structure is bonded to the outer cover, the absorbent structure expands along the second surface in the presence of a liquid so that the first layer increases concavity, wherein a pocket-like shape is formed in the presence of the liquid, the absorbent structure expands to a lesser extent along the first surface than the absorbent structure expands along the second surface in the presence of the liquid, and the absorbent structure has a fluid intake rate of at least about 0.5 cubic centimeters per second or greater.

Claim 30 is submitted to be nonobvious in view of and patentable over Suzuki et al. and Hamilton et al. for substantially the same reasons as claim 17. That is, whether considered alone or in combination the references fail to teach or suggest an absorbent structure having a first surface opposite a second surface bonded to an outer cover, the absorbent structure expands along the second surface in the presence of a liquid, wherein the absorbent structure expands to a lesser extent along the first surface than the second surface in the presence of liquid so that the first layer

increases concavity and forms a pocket-like shape.

As discussed above in relation to claim 17, Hamilton et al. is generally directed to absorbent articles comprising fibrous nits and other free-flowing particles. Notably, Hamilton et al. is not relied upon to cure the deficiencies of Suzuki et al. described below and nor does it do so.

Suzuki et al., as discussed above, contains a P sheet bonded to a Q sheet. In contrast to Suzuki et al., claim 30 recites an expanding absorbent structure that expands in the presence of a liquid along a second surface bonded to the outer cover. The disclosure of Suzuki et al. thus teaches construction of an article that functions according to the exact opposite principle of claim 30 by requiring that body-facing P sheet expand upon contact with liquid. Notably, Hamilton et al. is not relied upon to cure these deficiencies of Suzuki et al., nor does it do so.

Moreover, any modification of Suzuki et al. to teach the features of claim 30 would be improper. Such a modification of Suzuki et al. would frustrate the desired intent of Suzuki et al. by requiring that the outward facing Q sheet expand upon contact with liquids. Such expansion of the Q sheet would be in the direction away from the P sheet. As such, if the outward facing Q sheet were to expand upon such contact with liquids, the Q sheet would expand away from the wearer and fail to form a body-facing concavo-convex structure. For these reasons, claim 17 is submitted to be patentable over Suzuki et al. and Hamilton et al.

For the reasons above, Appellants submit that claim 30 is nonobvious in view of and patentable over Suzuki et al. and Hamilton et al.

Claims 31-40 and 45 depend directly or indirectly from claim 30 and are submitted to be patentable over the Suzuki et

al. and Hamilton et al. for at least the same reasons as claim 30.

Claim 42

Claim 42 is directed to an absorbent structure comprising:

a first layer having a basis weight between about 10 and about 150 grams per square meter that expands less than 10% in the presence of a liquid; and

an absorbent second layer comprising polyurethane foam and bonded to the first layer, wherein the absorbent second layer lies flat in a dry state, wherein the absorbent second layer expands at least 20% in the presence of the liquid so that the second layer increases concavity, wherein a pocket-like shape is formed along an interface of the first and second layers in the presence of the liquid, and the absorbent structure has a fluid intake rate of about 0.5 cubic centimeters per second or greater measured using the Fluid Intake Rate Test.

Claim 42 is submitted to be nonobvious in view of and patentable over Suzuki et al. and Hamilton et al. for at least the same reasons as claim 17. That is, whether considered alone or in combination the references fail to teach or suggest an absorbent structure having an absorbent second layer that lies flat in a dry state, wherein the absorbent second layer expands at least 20% in the presence of liquid so that it increases concavity, and wherein a pocket-like shape is formed along the interface of the first and second layers of the absorbent structure in the presence of liquid.

Hamilton et al., as described above, does not cure the deficiencies of claim 43 with respect to the failure of Suzuki et al. to teach an absorbent article that lies flat in a dry state and expands along a second surface in the presence of a liquid so that an opposite first surface increases concavity.

Moreover, Hamilton et al. is not relied upon by the Office to cure these deficiencies of Suzuki et al.

For the reasons above, Appellants respectfully submit that claim 42 is nonobvious in view of and patentable over Suzuki et al. and Hamilton et al.

Claim 43

Claim 43 is directed to an absorbent structure comprising:

a first layer that expands less than 10% in the presence of a liquid; and

an absorbent second layer comprising polyurethane foam and bonded to the first layer, wherein the absorbent second layer lies flat in a dry state, wherein the absorbent second layer expands at least 20% in the presence of the liquid so that the second layer increases concavity, wherein a pocket-like shape is formed along an interface of the first and second layers in the presence of the liquid, the absorbent structure has a fluid intake rate of about 0.5 cubic centimeters per second or greater, and only one of the first and second layers is elastomeric.

Claim 43 is submitted to be nonobvious in view of and patentable over Suzuki et al. and Hamilton et al. for substantially the same reasons as claim 17. That is, the references fail to teach or suggest an absorbent structure having an absorbent second layer that lies flat in a dry state, wherein the absorbent second layer expands at least 20% in the presence of liquid so that it increases concavity, and wherein a pocket-like shape is formed along the interface of the first and second layers of the absorbent structure in the presence of liquid.

Hamilton et al., as described above, does not cure the deficiencies of claim 43 with respect to the failure of Suzuki

et al. to teach an absorbent article that lies flat in a dry state and expands along a second surface in the presence of a liquid so that an opposite first surface increases concavity. Moreover, Hamilton et al. is not relied upon by the Office to cure these deficiencies of Suzuki et al.

For the reasons above, Appellants respectfully submit that claim 43 is nonobvious in view of and patentable over Suzuki et al. and Hamilton et al.

F. Claims 27 and 37 are submitted to be nonobvious in view of and patentable over Suzuki et al. in view of Hamilton et al. and further in view of Carlucci et al.

Claim 27

Claim 27 depends from claim 17 and recites that at least one of the first and second layers comprises at least one slit to control shaping. Claim 27 is submitted to be nonobvious in view of and patentable over Suzuki et al. in view of Hamilton et al. and further in view of Carlucci et al. for at least the same reasons as claim 30 based on its dependency therefrom.

Claim 37

Claim 37 depends indirectly from claim 30 and recites that the first surface is treated by at least one of the group consisting of necking, creping, pleating, aperturing, and mechanical teasing. Claim 37 is submitted to be nonobvious in view of and patentable over Suzuki et al. in view of Hamilton et al. and further in view of Carlucci et al. for at least the same reasons as claim 17 based on its dependency therefrom.

CONCLUSION

For the reasons stated above, Appellants respectfully request that the Office's rejections be reversed and that claims 1, 3, 7-15, 17-22, and 24-46 be allowed.

Respectfully submitted,

/Richard L. Bridge/

Richard L. Bridge, Reg. No. 40,529
ARMSTRONG TEASDALE LLP
One Metropolitan Square, 26th Floor
St. Louis, Missouri 63102
(314) 621-5070

RLB/PEB/AGH
Via EFS

VIII. CLAIMS APPENDIX

1. A single-layer absorbent structure, comprising:

a first surface opposite a second surface, wherein the single-layer absorbent structure lies flat in a dry state and expands along the second surface in the presence of a liquid so that the first surface increases concavity, wherein a pocket-like shape is formed in the presence of the liquid, the single-layer absorbent structure expands to a lesser extent along the first surface than the single-layer absorbent structure expands along the second surface in the presence of the liquid, the single-layer absorbent structure has a fluid intake rate of about 0.5 cubic centimeters per second or greater, and the single-layer absorbent structure has a thickness of about 10 millimeters or less in a dry state.

3. The single-layer absorbent structure of Claim 1, wherein the single-layer of absorbent material comprises at least one of the group consisting of thermoplastic foams, thermoset foams, cellulosic foams, superabsorbent foams, foam materials with superabsorbent particles embedded therein, non-foam materials with superabsorbent particles embedded therein, fibrous materials with superabsorbent particles embedded therein, coforms, staple fiber webs, netting, scrims, superabsorbent scrims, superabsorbent films, spunbond with

superabsorbents, meltblown with superabsorbents, elastomeric materials, and combinations thereof.

7. The single-layer absorbent structure of Claim 1, wherein the single-layer absorbent structure has a subtended angle of about 180 degrees or less in the presence of a liquid.

8. The single-layer absorbent structure of Claim 1, wherein the single-layer absorbent structure has a radius of curvature of about 38 centimeters or less in the presence of a liquid.

9. The single-layer absorbent structure of Claim 1, wherein the single-layer absorbent structure has a basis weight between about 50 and about 1000 grams per square meter.

10. The single-layer absorbent structure of Claim 1, wherein the first surface is treated to expand less in the presence of a liquid relative to the extent to which the second surface expands in the presence of a liquid.

11. The single-layer absorbent structure of Claim 1, wherein the first surface is treated by at least one of the group consisting of necking, creping, pleating, aperturing, and

mechanical teasing.

12. The single-layer absorbent structure of Claim 1, wherein at least one of the first and second surfaces comprises at least one slit to control shaping.

13. The single-layer absorbent structure of Claim 1, wherein at least one of the first and second surfaces comprises at least one region of reduced expansion.

14. The single-layer absorbent structure of Claim 13, wherein the at least one region of reduced expansion has been modified by at least one of the group consisting of densification, embossment, heat treatment, adhesive bonding, ultrasonic bonding, and combinations thereof.

15. The single-layer absorbent structure of Claim 1, wherein at least one of the first and second surfaces undergoes anisotropic expansion in the presence of a liquid.

17. An absorbent structure positioned between a bodyside liner and an outer cover, the absorbent structure, comprising:

a first layer that expands less than 10% in the presence of a liquid, wherein the first layer is positioned adjacent the

bodyside liner; and

an absorbent second layer comprising polyurethane foam and having a basis weight between about 100 and about 1000 grams per square meter bonded to the first layer, wherein the absorbent second layer expands at least 20% in the presence of the liquid so that the second layer increases concavity, wherein a pocket-like shape is formed along an interface of the first and second layers in the presence of the liquid, wherein the absorbent second layer is positioned adjacent the outer cover, and the absorbent structure has a fluid intake rate of about 0.5 cubic centimeters per second or greater.

18. The absorbent structure of Claim 17, wherein the absorbent structure has a subtended angle of about 30 degrees to about 180 degrees in the presence of a liquid.

19. The absorbent structure of Claim 17, wherein the absorbent structure has a radius of curvature of about 38 centimeters or less in the presence of a liquid.

20. The absorbent structure of Claim 17, wherein the structure has a thickness of about 1 to about 10 millimeters in a dry state.

21. The absorbent structure of Claim 17, wherein at least one of the first and second layers is elastomeric.

22. The absorbent structure of Claim 17, wherein the first layer has a basis weight between about 10 and about 150 grams per square meter.

24. (Original) The absorbent structure of Claim 17, wherein the first layer comprises at least one of the group consisting of nonwoven materials, wetlaid, airlaid, spunbond, meltblown, coform, bonded-carded webs, foams, tissue, netting, scrim, woven materials, and combinations thereof.

25. The absorbent structure of Claim 17, wherein the absorbent second layer comprises at least one of the group consisting of thermoplastic foams, thermoset foams, superabsorbent foams, foam materials with superabsorbent particles embedded therein, and combinations thereof.

26. The absorbent structure of Claim 17, wherein the absorbent second layer comprises a superabsorbent material.

27. The absorbent structure of Claim 17, wherein at least one of the first and second layers comprises at least one slit

to control shaping.

28. The absorbent structure of Claim 17, wherein at least one of the first and second layers comprises at least one region of reduced expansion.

29. The absorbent structure of Claim 28, wherein the at least one region of reduced expansion has been modified by at least one of the group consisting of densification, embossment, heat treatment, adhesive bonding, ultrasonic bonding, and combinations thereof.

30. An absorbent article, comprising:

a body side liner;

an outer cover; and

an absorbent structure comprising polyurethane foam and having a basis weight between about 50 and about 1000 grams per square meter positioned between the body side liner and the outer cover, wherein the absorbent structure includes a first surface opposite a second surface, the second surface of the absorbent structure is bonded to the outer cover, the absorbent structure expands along the second surface in the presence of a liquid so that the first layer increases concavity, wherein a pocket-like shape is formed in the presence of the liquid, the

absorbent structure expands to a lesser extent along the first surface than the absorbent structure expands along the second surface in the presence of the liquid, and the absorbent structure has a fluid intake rate of at least about 0.5 cubic centimeters per second or greater.

31. The absorbent article of Claim 30, wherein the absorbent structure comprises a single layer of absorbent material.

32. The absorbent article of Claim 31, wherein the single layer of absorbent material comprises at least one of the group consisting of thermoplastic foams, thermoset foams, superabsorbent foams, foam materials with superabsorbent particles embedded therein, and combinations thereof.

33. The absorbent article of Claim 30, wherein the first surface is a surface of a first layer and the second surface is a surface of an absorbent second layer that is bonded to the first layer, the second layer expands in the presence of a liquid and increases concavity toward the first layer along an interface of the first and second layers in the presence of a liquid, and the first layer expands to a lesser extent than the second layer expands in the presence of a liquid.

34. The absorbent article of Claim 33, wherein the first layer comprises at least one of the group consisting of nonwoven materials, wetlaid, airlaid, spunbond, meltblown, coform, bonded-carded webs, foams, tissue, netting, scrim, woven materials, and combinations thereof.

35. The absorbent article of Claim 33, wherein the absorbent second layer comprises at least one of the group consisting of thermoplastic foams, thermoset foams, superabsorbent foams, foam materials with superabsorbent particles embedded therein, and combinations thereof.

36. The absorbent article of Claim 30, wherein the first surface is treated to expand less in the presence of a liquid relative to the extent to which the second surface expands in the presence of a liquid.

37. The absorbent article of Claim 36, wherein the first surface is treated by at least one of the group consisting of necking, creping, pleating, aperturing, and mechanical teasing.

38. The absorbent article of Claim 30, wherein the second surface expands at least 20% in the presence of a liquid.

39. The absorbent article of Claim 30, wherein the absorbent article comprises at least one of the group consisting of personal care absorbent articles and medical absorbent articles.

40. The absorbent article of Claim 30, wherein the absorbent article comprises at least one of the group consisting of diapers, training pants, swimwear, absorbent underpants, child-care pants, adult incontinence products, pads, containers, urinary shields, feminine hygiene products, sanitary napkins, menstrual pads, panty liners, panty shields, interlabials, tampons, medical absorbent garments, drapes, gowns, bandages, wound dressings, underpads, bed pads, cleaning applications, clothing components, filters, athletic and recreation products, construction products, and packaging products.

41. A single-layer absorbent structure, comprising:

a first surface opposite a second surface, wherein the absorbent structure lies flat in a dry state and expands along the second surface in the presence of a liquid so that the first surface increases concavity, wherein a pocket-like shape is formed in the presence of the liquid, the single-layer

absorbent structure expands to a lesser extent along the first surface than the single-layer absorbent structure expands along the second surface in the presence of the liquid, the single-layer absorbent structure has a fluid intake rate of about 0.5 cubic centimeters per second or greater, and at least one of the first and second surfaces undergoes anisotropic expansion in the presence of the liquid.

42. An absorbent structure, comprising:

a first layer having a basis weight between about 10 and about 150 grams per square meter that expands less than 10% in the presence of a liquid; and

an absorbent second layer comprising polyurethane foam and bonded to the first layer, wherein the absorbent second layer lies flat in a dry state, wherein the absorbent second layer expands at least 20% in the presence of the liquid so that the second layer increases concavity, wherein a pocket-like shape is formed along an interface of the first and second layers in the presence of the liquid, and the absorbent structure has a fluid intake rate of about 0.5 cubic centimeters per second or greater measured using the Fluid Intake Rate Test.

43. An absorbent structure, comprising:

a first layer that expands less than 10% in the presence

of a liquid; and

an absorbent second layer comprising polyurethane foam and bonded to the first layer, wherein the absorbent second layer lies flat in a dry state, wherein the absorbent second layer expands at least 20% in the presence of the liquid so that the second layer increases concavity, wherein a pocket-like shape is formed along an interface of the first and second layers in the presence of the liquid, the absorbent structure has a fluid intake rate of about 0.5 cubic centimeters per second or greater, and only one of the first and second layers is elastomeric.

44. The absorbent structure of Claim 17, wherein the absorbent structure lies flat in a dry state.

45. The absorbent article of Claim 30, wherein the absorbent structure lies flat in a dry state.

46. The absorbent structure of Claim 1, wherein the single-layer absorbent structure comprises a polyurethane foam.

IX. EVIDENCE APPENDIX

Machine Translation of Japan Patent Application Publication No. 2003-033381 (Suzuki et al.), first cited by the Office at page 2 in the final Office action of November 28, 2007. The Machine Translation of Suzuki et al. reproduced below was provided to Appellants by the Office in the final Office action of November 28, 2007.

Notice of References Cited	Application/Control No. 10/820,636	Applicant(s)/Patent Under Reexamination RANGANATHAN ET AL.	
	Examiner Melanie J. Hand	Art Unit 3761	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-			
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

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*	N	EP 804915 A1	11-1997	European Patent	CARLUCCI et al.	A61F 13/15
*	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	English translation of JP 2003-033381 A
	V	
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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
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(71)Applicant : OJI PAPER CO LTD
NIPPON KYUSHUTAI GIJUTSU KENKYUSHO:KK
LIVEDO CORPORATION

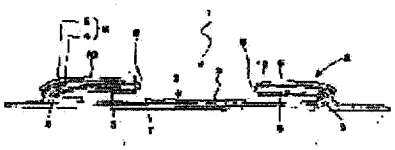
(72)Inventor : SUZUKI MIGAKU
SUGIYAMA KATSUHIKO
MORI KAZUYO

(54) SHEETLIKE ABSORPTION BODY AND ABSORPTION BODY PRODUCT USING THE SAME

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a sheetlike absorption body having a leak-protecting wall.

SOLUTION: The sheetlike absorption body has recessed and protruding parts and has self three-dimensionalizing function which forms recessed and protruding parts having the step between the recessed and protruding parts of 2A mm after absorbing water by partial uplift due to water absorption and swelling, when the step between the recessed and protruded parts is A mm when not absorbing water (when dried).



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* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the absorber used for a urine pad, an urinary incontinence product, a diaper, etc. in more detail about an absorber product.
[0002]
[Description of the Prior Art] Conventionally, the approach of turning up the approach and absorber which arrange gathers in three dimensions as a means to prevent the horizontal leakage of urine, and forming an anti-leak barrier etc. is learned.
[0003] The high-polymer absorbent contained in inside swells the approach of turning up said absorber, and it stands up, or demonstrates effectiveness, like the chewiness of a wall becomes firm as it absorbs urine. However, it was omnidirection-like [the swelling of a high-polymer absorbent], and in order not to necessarily show form status change-ization in one direction to the direction which expects standing up, as a result, standing up of a high-polymer absorbent became slow, and had the case where urine was overflowed before **********.
[0004]
[Problem(s) to be Solved by the Invention] In the absorber which can stand up by liquid absorption and can form an anti-leak barrier, this invention speeds up [of standing up of the part used as an anti-leak barrier], and aims at raising a leakproof effect certainly.
[0005]
[Means for Solving the Problem] This invention includes each following invention.
[0006] (1) The sheet-like absorber characterized by having the spontaneous solidification function in which the level difference of the concave heights after water absorption forms the concave convex voice of 2 or more Amms by water absorption and partial upheaval by swelling when it has concave heights on a front face and the level difference of the concave heights at the time (at the time of desiccation) of un-absorbing water is set to Amm.
[0007] (2) The sheet-like absorber given in (1) term characterized by setting the level difference of the concave heights after water absorption to 3 or more Amms when the level difference of the concave heights at the time of said un-absorbing water is set to Amm.
(3) A sheet-like absorber given in (1) term or (2) terms which are characterized by the level difference (A) of the concave heights at the time of said un-absorbing water being 0.2mm - 2.0mm.
[0008] (4) said -- a sheet -- ** -- an absorber -- a sheet -- ** -- a base material -- one side -- a water-absorbing resin (SAP) -- containing -- absorption -- a layer -- having formed -- P -- a sheet -- from -- becoming -- and -- said -- absorption -- a layer -- inside -- SAP -- a content -- 50 -- % of the weight - 95 -- % of the weight -- it is -- things -- the description -- ** -- carrying out -- (-- one --) -- a term - (-- three --) -- a term -- some -- one -- a term -- a publication -- a sheet -- ** -- an absorber .
(5) Said P sheet is a sheet-like absorber given in (4) terms characterized by the thickness at the time of un-absorbing water being 2.0mm or less.
[0009] (6) Said P sheet is a sheet-like absorber given in any 1 term of the (1) term - (5) term

characterized by forming the absorption layer in one side of a sheet-like base material for every fixed spacing band-like.
(7) A sheet-like absorber given in any 1 term of the (1) term - (6) term characterized by carrying out the laminating of the Q sheet which supports P sheet to said P sheet surface, and is further fixed to it.
[0010] (8) Said P sheet and said Q sheet are a sheet-like absorber given in (7) terms characterized by being intermittently joined for every fixed spacing.
(9) The sheet-like absorber given in (8) terms characterized by junction spacing of said P sheet and said Q sheet being 5mm or more.
(10) Said P sheet is a sheet-like absorber given in any 1 term of the (7) term - (9) term characterized by being joined to said Q sheet in the part in which the absorption layer is not formed.
[0011] (11) A sheet-like absorber given in any 1 term of the (1) term - (10) term characterized by for said concave heights folding up said sheet-like absorber, and forming them.
(12) A sheet-like absorber given in any 1 term of the (1) term - (10) term characterized by forming said concave heights by said P sheet's setting said Q sheet and fixed spacing, and joining it intermittently where slack is able to be given.
[0012] (13) Said P sheet is a sheet-like absorber given in (12) terms characterized by being joined to said Q sheet in the part in which the absorption layer is not formed.
(14) said -- P -- a sheet -- a sheet -- ** -- a base material -- a field -- SAP -- containing -- absorption -- a layer -- forming -- becoming -- absorptivity -- a sheet -- at least -- one -- a layer -- a laminating -- carrying out -- having -- mutual -- intermittent -- joining -- having -- a laminated structure -- forming -- having -- **** -- said -- P -- a sheet -- said -- Q -- a sheet -- mutual -- intermittent -- joining -- having -- **** -- things -- the description -- ** -- carrying out -- (-- 12 --) -- a term -- or -- (-- 13 --) -- a term -- a publication -- a sheet -- ** -- an absorber .
[0013] (15) A sheet-like absorber given in any 1 term of the (4) term - (14) term characterized by said absorption layer containing the microfibril-ized cellulose (MFC) which are a water-absorbing resin (SAP) and its binding material.
(16) said -- P -- a sheet -- a sheet -- ** -- a base material -- hydrophilicity -- diffusibility -- it is -- wood pulp -- a sheet -- rayon -- a system -- a nonwoven fabric -- a cotton -- a nonwoven fabric -- or -- polyethylene -- a system -- polypropylene -- a system -- polyethylene terephthalate -- a system -- polyvinyl alcohol -- a system -- fiber -- from -- becoming -- hydrophilization -- processing -- carrying out -- having had -- a nonwoven fabric -- from -- choosing -- having -- at least -- one -- a kind -- from -- becoming -- things -- the description -- ** -- carrying out -- (-- four --) -- a term - (-- 14 --) -- a term -- some -- one -- a term -- a publication -- a sheet -- ** -- an absorber -- .
[0014] (17) said -- Q -- a sheet -- polyethylene -- a system -- polypropylene -- a system -- polyethylene terephthalate -- a system -- polyvinyl alcohol -- a system -- fiber -- from -- becoming -- a span -- bond -- or -- a span -- bond -- /-- melt-blown one -- /-- a span -- bond -- complex -- from -- choosing -- having -- at least -- one -- a kind -- hydrophobicity -- a nonwoven fabric -- from -- becoming -- things -- the description -- ** -- carrying out -- (-- seven --) -- a term - (-- 14 --) -- a term -- some -- one -- a term -- a publication -- a sheet -- ** -- an absorber .
(18) A sheet-like absorber given in any 1 term of the (7) term - (14) term characterized by said Q sheet consisting of complex of the film chosen from a polyethylene system, a polypropylene system, a polyethylene terephthalate system, and a polyvinyl alcohol system, opening films or these films, and a nonwoven fabric.
[0015] (19) Absorb the liquid arranged between the surface sheet of liquid permeability, the watertight sheet of liquid impermeability, and both [these] sheets. In the absorber product which consists of an absorber to hold and has the guard function of liquid in the edges-on-both-sides section and/or the edge section of past time and a back bodice The absorber product characterized by said absorber becoming any 1 term of a (1) term - (18) term from the sheet-like absorber which has the spontaneous solidification function of a publication.
[0016] (20) It is the absorber product given in (19) terms characterized by classifying said absorber into a central part and a edges-on-both-sides part, for said edges-on-both-sides part having the laminated

structure which has a level difference with a thickness of 1.0mm or less as compared with said center section at the time of un-absorbing water, starting so that said edges-on-both-sides part may have a level difference with a thickness of 2.0mm or more by water absorption and swelling, and functioning as a flank leakage stopper (side guard bank).
[0017] (21) It is the absorber product given in (19) terms characterized by classifying said absorber into a central part and a edges-on-both-sides part, for said edges-on-both-sides part having the folded-up structure, and having a level difference with a center section [said] and a thickness of 2mm or less at the time of un-absorbing water, starting so that it may have a level difference with a center section [said] and a thickness of 5mm or more by water absorption and swelling, and functioning as a three-dimensional side guard bank.
[0018] (22) Said absorber is classified into the edge parts and central parts of past time and a back bodice. Said edge part has the laminated structure which has a level difference with a thickness of 1.0mm or less as compared with said central part at the time of un-absorbing water. The absorber product water absorption and given in (19) terms which are characterized by starting so that said edge part may form a level difference with a thickness of 2.0mm or more by swelling, and functioning as an edge leakage stopper (and guard bank).
[0019] (23) Said absorber is classified into the edge parts and central parts of past time and a back bodice. Said edge part has the folded-up structure and has a level difference with a center section [said] and a thickness of 2mm or less at the time of un-absorbing water. The absorber product water absorption and given in (19) terms which start so that said center section and the level difference of 5mm or more may be formed by swelling, and are characterized by three-dimensional and functioning as a guard bank.

[0020] (24) said -- an absorber -- later self -- time -- the section -- un--- water absorption -- the time -- **** -- two -- mm -- less than -- thickness -- a level difference -- having -- water absorption -- swelling -- five -- mm -- more than -- a level difference -- having -- irregularity -- structure -- from -- becoming -- facilities -- a flare part -- forming -- having -- **** -- things -- the description -- ** -- carrying out -- (-- 19 --) -- a term - (-- 23 --) -- a term -- some -- one -- a term -- a publication -- an absorber -- a product .
(25) said -- an absorber -- a longitudinal direction -- meeting -- a center -- a field -- un--- water absorption -- the time -- **** -- the -- the circumference -- a part -- comparing -- two -- mm -- less than -- thickness -- a level difference -- having -- water absorption -- swelling -- the circumference -- a part -- comparing -- five -- mm -- more than -- thickness -- a level difference -- having -- as -- starting -- discharge -- a part -- sticking -- as -- heights -- structure -- forming -- having -- **** -- things -- the description -- ** -- carrying out -- (-- 19 --) -- a term - (-- 24 --) -- a term -- some -- one -- a term -- a publication -- an absorber -- a product .
[0021]
[Embodiment of the Invention] Concave heights with the sheet-like absorber of this invention small on a front face are formed. Although these concave heights are not the big level differences which induce a wearer's sense of incongruity before liquid absorption, when liquid absorption is begun once, the description is in the point that a concavo-convex level difference becomes large quickly. The level difference of these concave heights is formed by using the sheet-like absorber which has the absorption layer which contains a water-absorbing resin (SAP) so much.
[0022] The sheet-like absorber of this invention contains a mode from which the flat part which folds up an absorber, and does not form and fold up heights serves as a crevice, in order to form concave heights in the front face. Moreover, in order to form concave heights, on a sheet-like absorber, the laminating of another sheet-like absorber is carried out, heights are formed, and a mode from which the part to which the laminating of the sheet-like absorber is not carried out serves as a crevice is included.
[0023] Furthermore, in order to make an absorber produce a big expansion change and to enlarge a concavo-convex level difference, the mode using the effectiveness that a curve takes place in the fixed direction by the difference in the reduction of area according two elements with which expansion coefficients differ to lamination and water absorption is included. You may think that the basal principle of such a configuration of a sheet-like absorber is the same as the curliness generating principle by the

bimetal and two-component system side-by-side fiber which are used as electric contact.
[0024] When the sheet-like absorber which has the concave heights of this invention is used for an absorber product, it can be made to function as an anti-leak barrier for preventing the leakage from the side edge and the edge of an absorber product. In order for an absorber to work as an anti-leak barrier, it is not necessary to form three-dimensional gathers with a flexible elastic body etc. like the conventional absorber product.
[0025] The sheet-like absorber of this invention is characterized by setting preferably 2 or more Amms of level differences of the irregularity after water absorption to 3 or more Amms by partial upheaval, when the level difference of the concave heights at the time (at the time of desiccation) of un-absorbing water is set to Amm, and a physiological saline (water absorption expresses water absorption of a physiological saline henceforth) is absorbed water and swollen. Moreover, as for the level difference (A) of the irregularity at the time of un-absorbing water, it is desirable that it is 0.2mm - 2.0mm. The effectiveness as an anti-leak barrier at the time of a concavo-convex level difference swelling in less than 0.2mm becomes small, and on the other hand, if a level difference becomes large exceeding 2.0mm, when it wears, it will come to produce the sense of incongruity by irregularity. Furthermore, it is desirable that the thickness at the time of un-absorbing water [of a sheet-like absorber] is 2.0mm or less. If thickness exceeds 2.0mm, it will come as processing proper **** at the time of forming concave heights.
[0026] As for the sheet-like absorber of this invention, it is desirable to stick two kinds of sheets with which water dilatation differs in the state of un-swelling, and to use them. That is, by sticking P sheet of high bloating tendency which comes to form the absorption layer containing high-concentration SAP in one side of a sheet-like base material, and whether SAP is hardly contained and Q sheet which is not contained at all and which supports said P sheet and is fixed, when water is absorbed, swelling and the plumping function which SAP has can give three-dimensional structure to a sheet-like absorber. In this invention, since these solidification takes place spontaneously in connection with a water absorption swelling phenomenon, it will call spontaneous solidification.
[0027] The configuration changes greatly with integrated states of the description of Q sheet and the configuration where such spontaneous solidification is combined with the description of P sheet, a configuration, and this, and both sheets.
[0028] The gestalt of spontaneous solidification is divided roughly into two in the sheet-like absorber of this invention. The 1st gestalt joins P sheet and Q sheet intermittently for every fixed spacing. In this case, in order to make this easy to be easy to be crooked and to combine as a P sheet What formed the existence region and nonexistence field of an absorption layer by turns is used for a sheet-like base material. What was intermittently combined for every fixed spacing with means, such as Q sheet and thermal melting arrival, in the field to which the absorption layer of P sheet does not exist with non-bloating tendency, using a base material sheet with sufficient gestalt stability as a Q sheet is used advantageously.
[0029] It upheaves from the ease of deforming to homogeneity, and the stress force to generate causes a strong standing-up condition at the same time water absorption and the swelling force will be limited to the joint range, if it absorbs water and such a sheet-like absorber is made to swell. Moreover, P sheet and Q sheet are preferably joined at intervals of 5-50mm 5mm or more. If junction spacing is set to less than 5mm, junction spacing will become narrow, water absorption and the swelling force will be checked, and sufficient spontaneous solidification function will no longer be demonstrated. Moreover, if junction spacing becomes large exceeding 50mm, the upheaval force generated by water absorption and swelling will be spread, and the spontaneous solidification function to have a strong standing-up condition will no longer be obtained.
[0030] Furthermore, P sheet and Q sheet can fold up P sheet, not only making each rival in the state of expansion but can fabricate it in a condition, a sag condition, and the channel condition, Q sheet can be made to be able to rival, sufficient swelling opening can be prepared, and the condition of being easy to solidify easily also by the small swelling force can also be brought about. Moreover, the at least one-layer laminating of the absorptivity sheet in which the absorption layer which contains SAP at a sheet-

like base material at said P sheet was formed is carried out, sheets form mutually the laminated structure combined partially, and it becomes possible to make said P sheet and said Q sheet easy to swell also by being combined partially mutually of them.

[0031] P sheet and Q sheet are combined continuously, as the 2nd gestalt of spontaneous solidification, it folds up so that P sheet side may become inside, and you may make it the fold-up section turn into heights. That is, if P sheet side is carried out inside beforehand and the absorber is folded up in order for a sheet-like absorber to bend backward to Q sheet side since the liquid absorption expansion force of Q sheet is small and to deform, even if P sheet carries out liquid absorption expansion, before liquid absorption, what was a concavo-convex small level difference can fold up by liquid absorption, the section can bend backward, and a big anti-leak barrier can be formed. In this case, since effectiveness will fade if association of both sheets is made intermittent, it is desirable to make it join together continuously.

[0032] moreover -- if P sheet is folded up in the nonexistence field of an absorption layer as a P sheet using what formed the existence region and nonexistence field of an absorption layer by turns to a sheet-like base material -- processing -- the proper outstanding sheet-like absorber can be obtained. The folding configuration of a sheet-like absorber can fold up the thing which folded up the edges-on-both-sides section inside, or the edges-on-both-sides section inside, and what subsequently has the cross-section configuration of the shape of Z character which turned up the fold-up section outside from the middle can be used for it.

[0033] The sheet which consists of a wood pulp sheet with a hydrophilic property and diffusibility, a rayon system nonwoven fabric, a cotton nonwoven fabric, etc. as a sheet-like base material which constitutes P sheet of this invention can be used. Moreover, what performed hydrophilization processing can also be used for the nonwoven fabric which consists of the span bond or the span bond / melt-blown one / span bond complex which consists of fiber of a polyethylene system, a polypropylene system, a polyethylene terephthalate system, and a polyvinyl alcohol system.

[0034] As for the absorption layer which constitutes P sheet, it is desirable that the SAP content in an absorption layer is 50 % of the weight - 95 % of the weight. Spontaneous solidification function with an SAP content sufficient at less than 50 % of the weight is no longer demonstrated, on the other hand, if an SAP content increases exceeding 95 % of the weight, SAP will dedrop come to be easy and processing proper ** of a sheet-like absorber will worsen. It is desirable to use what contained the microfibril-ized cellulose (MFC) which are SAP and its binding material as a coating which forms an absorption layer, for example, since P sheet which carried out coating of this coating and formed it in the nonwoven fabric etc. is very thin, folding and a laminating are very easy for it. Moreover, it can also use by changing P sheet into the laminating condition more than two-layer.

[0035] A using [it]-by this invention Q sheet is a sheet which is not included at all, hardly including SAP. At least one kind of hydrophobic nonwoven fabric chosen from the span bond or the span bond / melt-blown one / span bond complex which consists of fiber of a polyethylene system, a polypropylene system, a polyethylene terephthalate system, and a polyvinyl alcohol system may be used for Q sheet. The zygote of the film furthermore chosen from a polyethylene system, a polypropylene system, a polyethylene terephthalate system, and a polyvinyl alcohol system, opening films or these films, and a nonwoven fabric may be used.

[0036] Since Q sheet will also be transformed according to deformation upheaval of P sheet if it is supple and the sheet-like ingredient which is easy to deform is used as an ingredient which constitutes Q sheet, the absorber which is easy to get used to the body can be obtained. Moreover, although deformation of P sheet and upheaval will become easy to take place if gestalt stability uses the existing rigid sheet material well as an ingredient which constitutes Q sheet, it concordance-comes to be hard on the body. Although the backseat used for wrapping tissue and the absorber product of an absorber is generally advantageously used as a Q sheet, it can also arrange between a backseat and P sheet by using as Q sheet the puncturing polyethylene sheet which had rigidity more.

[0037] About the fixed approach of P sheet and Q sheet, junction through adhesion junction or polyethylene sheets, such as thermal melting arrival, such as a heat seal, and hot melt, etc. is performed.

[0038] The aforementioned sheet-like absorber in this invention can be used for an absorber product in various forms, and it becomes possible to attain a gathers function like the conventional side solid gathers for leakage-at-bulb prevention, and wet gathers by the structure size enlargement of an absorber, without using an elastic body by applying to the diaper for babies, adult-use paper diapers, or a napkin.
[0039] The sheet-like absorber of this invention acts as a guard function part of the liquid which prevents a liquid spill in the edges-on-both-sides section of an absorber product, and/or the edge section of past time and a back bodice while it can be used as an absorber of the absorber product which has the surface sheet of liquid permeability, the watertight sheet of liquid impermeability, and the absorber that carries out absorption maintenance of the liquid arranged among both [these] sheets and absorbs body fluid.
[0040] That is, it starts so that an absorber may be classified into a central part and a edges-on-both-sides part, said edges-on-both-sides part may have the laminated structure which has a level difference with a thickness of 1.0mm or less as compared with said center section at the time of un-absorbing water and said edges-on-both-sides part may have a level difference with a thickness of 2.0mm or more by water absorption and swelling, and it functions as a flank leakage stopper (side guard bank).
[0041] Moreover, the body of an absorber is classified into a central part and both the side part, and the sheet-like absorber of this invention has the structure where said both side part was folded up, is thick with the difference 2mm or less rather than said center section at the time of un-absorbing water, forms the level difference, it starts so that it may have a level difference with a center section [said] and a thickness of 5mm or more by water absorption and swelling, and it functions as a three-dimensional side guard bank.
[0042] Furthermore, an absorber is classified into the edge part and central part of the back bodice at the past time, and said edge part starts so that it may have the laminated structure which has a level difference with a thickness of 1.0mm or less as compared with said central part at the time of un-absorbing water and said edge part may have a level difference with a thickness of 2.0mm or more by water absorption and swelling, and it functions as an edge leakage stopper (and guard bank).
[0043] Moreover, an absorber is classified into the edge part and central part of the back bodice at the past time, and said edge part has the folded-up structure, is thick with the difference 2mm or less from said center section at the time of un-absorbing water, forms the level difference, it starts so that it may have said center section and the level difference of 5mm or more by water absorption and swelling, and it functions as three-dimensional and a guard bank.
[0044] The absorber which has the laminated structure and folding structure which are formed by the above-mentioned approach can be used for the absorber which has the laminated structure and folding structure in such the edges-on-both-sides section and a both-ends edge as it is.
[0045] Moreover, by using the absorber which forms the concavo-convex structure where it applies to a back bodice part from the length-from-the-crotch-to-the-cuff section, has a crevice between two heights, has a level difference with a thickness of 2mm or less at the time of un-absorbing water, and has the level difference of 5mm or more by water absorption and swelling The concavo-convex structure which becomes the back bodice part of an absorber product with the flare part of facilities is formed, and the effectiveness which lessens direct contact of the skin and facilities can be brought about.
[0046] Furthermore, it can use for the absorber product which forms heights structure which is stuck to a central field with a discharge part by using the absorber which starts so that it may have a level difference with a thickness of 2mm or less for the center-section field in alignment with a longitudinal direction as compared with the circumference part at the time of un-absorbing water and the central part may have a level difference with a thickness of 5mm or more by water absorption and swelling as compared with a circumference part.
[0047]
[Example] This invention is not limited by these examples, although the drawing in which the example of this invention is shown is made reference and this invention is explained below at a detail.
[0048] Drawing 1 shows the typical perspective view in the condition of the sheet-like absorber 1 of this invention of not absorbing water, and 2 shows a crevice and it shows heights by 3. Drawing 2 and

drawing 3 show the cross section before water absorption of the sheet-like absorber 1 shown in drawing 1 , and after water absorption. The level difference of the crevice 2 before water absorption of the sheet-like absorber 1 and heights 3 is shown in drawing 2 as t1, and the level difference of the crevice 2 after absorbing water to drawing 3 and heights 3 is shown as t2. If the sheet-like absorber of this invention sets the level difference of the crevice at the time of un-absorbing water, and heights to Amm, it will be characterized by setting the level difference of the crevice after water absorption, and heights to 2 or more Amms. That is, the relational expression of t1 and t2 shown in drawing 2 and drawing 3 is set to 2xt1 <=t2.

[0049] Drawing 4 and drawing 5 are the cross-sectional views showing another gestalt of the concave heights before water absorption of the sheet-like absorber of this invention, and after water absorption. The level difference of the heights 3 and the crevice 2 where the top face inclined is shown in drawing 4 as t3, the level difference of the heights 3 after absorbing water to drawing 5 and a crevice 2 is shown as t4, and the relation between t3 and t4 is expressed with the relational expression of 2xt3 <=t4.

[0050] Drawing 6 and drawing 7 are the cross-sectional views showing the concrete example of formation of a crevice and heights in the sheet-like absorber of this invention. Drawing 6 shows the cross-sectional view of the sheet-like absorber 1 before water absorption, and shows the condition that the P sheet 6 and the Q sheet 7 which come to form the absorption layer 5 intermittently on the sheet-like base material 4 were joined. That is, the P sheet 6 is joined to the Q sheet 7 in the part 8 in which the absorption layer is not formed where slack is given to the part in which the absorption layer 5 is formed in a edges-on-both-sides section field, heights 3 are formed, the part in which the absorption layer 5 of a central field is formed further is joined to the Q sheet 7, and the crevice 2 is formed. Although drawing 7 shows the condition of the sheet-like absorber 1 after water absorption, and the absorption layer 5 of the P sheet 6 all absorbs water, it swells and it is thick, especially the heights 3 curve up according to the plumping force of the absorption layer 5, and rise greatly, consequently become that [twice / more than] before the level difference of heights 3 and a crevice 2 absorbing water.

[0051] Drawing 8 and drawing 9 are the cross-sectional views showing another example of formation of a crevice and heights in the sheet-like absorber of this invention. Drawing 8 shows the cross-sectional view of the sheet-like absorber 1 before water absorption, and shows the condition that the P sheet 6 and the Q sheet 7 which come to form the absorption layer 5 intermittently on the sheet-like base material 4 were joined. The P sheet 6 folds up the part 8 in which the absorption layer between two absorption layers 5 is not formed in a edges-on-both-sides section field. Namely, as a line It is folded up so that the rear faces of the adjoining absorption layer 5 may contact, and it joins to the Q sheet 7, the end face section 9 is folded up, the section 10 is formed, subsequently to the inside, the folding section 10 is turned up and heights 3 are formed. When forming the heights 3 of such a configuration, as shown in drawing 8 , it is desirable that the absorption layer 5 is contained in the end face section 9 located inside an absorber among the end face sections 9 of the folding section 10.

[0052] Furthermore, the part in which the absorption layer 5 of the central field of the P sheet 6 is formed is joined to the Q sheet 7, and the crevice 2 is formed. Although drawing 9 shows the condition of the sheet-like absorber 1 after water absorption, and the absorption layer 5 of the P sheet 6 all absorbs water, it swells and it is thick, it swells, and stands up from the end face section 9, the level difference of the heights 3 before and behind water absorption and a crevice 2 doubles [more than] easily, and especially the heights 3 become still more possible [playing a role of an anti-leak barrier].

[0053] Drawing 10 and drawing 11 are the cross-sectional views showing another example of formation of a crevice and heights in the sheet-like absorber of this invention. Drawing 10 shows the cross-sectional view of the sheet-like absorber 1 before water absorption, and shows the condition that the P sheet 6 and the Q sheet 7 which come to form the absorption layer 5 the whole surface on the sheet-like base material 4 were joined. That is, the P sheet 6 and the Q sheet 7 are joined in one, the sheet-like absorber 1 is formed, further, as for the sheet-like absorber 1, the edges-on-both-sides section ****s the P sheet 6 inside, it is folded up, heights 3 are formed, and the flat part of a central field serves as a crevice 2. Although drawing 11 shows the condition of the sheet-like absorber 1 after water absorption,

and the absorption layer 5 of the P sheet 6 absorbs water, it swells and it is thick, the folding section which forms especially the heights 3 stands up, the level difference of the heights 3 before and behind water absorption and a crevice 2 doubles [more than] easily, and it becomes still more possible to play a role of an anti-leak barrier.

[0054] Drawing 12 and drawing 13 are the cross-sectional views showing still more nearly another example of formation of a crevice and heights in the sheet-like absorber of this invention. Drawing 12 shows the cross-sectional view of the sheet-like absorber 1 before water absorption, and shows the condition that the P sheet 6 and the Q sheet 7 of a configuration of that the laminating of the absorption sheet was carried out to the edges-on-both-sides section were joined. The sheet-like absorber 1 in namely, the edges-on-both-sides section of the P sheet 6 of the sheet-like absorber shown in drawing 6 The laminating of the absorptivity sheet 13 which furthermore comes to form the absorption layer 12 intermittently on the sheet-like base material 11 is carried out. In the part 14 in which the absorption layer is not formed, it is joined to the P sheet 6, and is formed, heights 3 are formed in the laminating part, and the part in which the absorption layer 5 of a center section is formed has become a crevice 2. Moreover, in this case, the P sheet 6 and the absorptivity sheet 13 may be formed for the same material, and may be formed for a different material. Drawing 13 shows the condition of the sheet-like absorber 1 after water absorption, an absorption layer carries out liquid absorption of it, is swollen, and can form a bulky anti-leak barrier.

[0055] The cross-sectional view in the condition that the top view of the tape mold disposable diaper with which the sheet-like absorber of this invention was used for drawing 14 , and drawing 15 cut the diaper shown in drawing 14 along with the V-V' line, and drawing 16 show the cross-sectional view of the both-ends edge of the condition [of having cut the diaper shown in drawing 14 along with the X-X' line] order bodice, respectively. As for the tape mold disposable diaper 15, the sheet-like absorber 1 is arranged in the longitudinal direction center section of the double-width watertight sheet 17 of liquid impermeability. Cover the sheet-like absorber 1, the surface sheet 16 of liquid permeability is arranged, and the sideseat 19 which consists of a nonwoven fabric is arranged on the watertight sheet 17 of the edges on both sides of the sheet-like absorber 1. Furthermore, between the sideseat 19 and the watertight sheet 17, the flexible elastic member 20 for the circumferences of a foot is arranged, and it is formed, and the FASUNINGU tape 21 is attached in the edges on both sides of a back bodice. Moreover, as shown in drawing 14 , the heights 3 used as the flank leakage stopper 18 and the edge leakage stopper 22 are formed in the edges-on-both-sides section of the sheet-like absorber 1, and the edge section of an order bodice, respectively. In this example, as shown in drawing 15 , the sheet-like absorber 1 joins the P sheet 6 and the Q sheet 7 which form the absorption layer 5 in the sheet-like base material 4 intermittently, and become it, and is formed, and the heights 3 from which the edges-on-both-sides section is folded up in the shape of Z character, and serves as the flank leakage stopper 18 are formed. Moreover, as shown in drawing 16 , at the both-ends edge of the sheet-like absorber 1 order bodice, the heights 3 used as the edge leakage stopper 22 of a laminated structure as shown in drawing 12 are formed.

[0056] Drawing 17 is the top view showing another example of the tape mold disposable diaper which used this invention sheet-like absorber, and drawing 18 is the cross-sectional view showing the condition of having cut the diaper shown in drawing 17 along with the Y-Y' line. Although the basic configuration of the tape mold disposable diaper 15 is the same as that of the case of previous drawing 14 , as shown in drawing 17 , the concavo-convex structure used as the flare part of facilities which forms a crevice 2 between two heights 3, and becomes is formed in the central field of the back bodice of the sheet-like absorber 1.

[0057] In this case, as shown in drawing 18 , the heights 3 of concavo-convex structure join to the Q sheet 7, where two places of the central field of the P sheet 6 are bent in the shape of an omega character, make a front face Taira and others, and are formed. If urination and defecation take place by using the sheet-like absorber 1 which has such concavo-convex structure, since heights 3 will upheave, the level difference of a crevice and heights will become large and facilities will be guided to a crevice 2, adhesion of the facilities to a hip is mitigable.

[0058] Drawing 19 is the top view of the urine pad which used the sheet-like absorber of this invention, and drawing 20 is the cross-sectional view showing the condition of having cut the urine pad shown in drawing 19 along with the Z-Z' line. The sheet-like absorber 1 is arranged on the watertight sheet 17 of liquid impermeability, the sheet-like absorber 1 is covered, the surface sheet 16 of liquid permeability is arranged, further, on the watertight sheet 17 of the edges on both sides of the sheet-like absorber 1, the sideseat 19 which consists of a nonwoven fabric is arranged, and the urine pad 23 is formed. In this example, as shown in drawing 19 , heights 3 are formed in the center section in alignment with the longitudinal direction of the sheet-like absorber 1 which constitutes the urine pad 23, and it absorbs water, swells and starts, and has the discharge part and the function to stick. In this case, as shown in drawing 20 , heights 3 join to the Q sheet 7, where the central field of the P sheet 6 is bent in the shape of an omega character, make a front face Taira and others, and are formed.
[0059]
[Effect of the Invention] According to the first gestalt of this invention, since an anti-leak barrier can be formed with an absorber, when this is applied to an absorber product, the flexible elastic member for forming a leakproof system like the conventional absorber product etc. becomes unnecessary.
[0060] According to the second gestalt of this invention, it becomes possible to form an anti-leak barrier with a gestalt still more desirable than said first gestalt.
[0061] According to the third gestalt of this invention, when it wears, the sense of incongruity by irregularity is not produced.
[0062] According to the fourth gestalt of this invention, the good spontaneous solidification function for forming an anti-leak barrier can be given.
[0063] According to the fifth gestalt of this invention, the very thin sheet-like absorber for forming an anti-leak barrier can be obtained.
[0064] according to the sixth gestalt of this invention -- processing -- the proper outstanding sheet-like absorber can be obtained.
[0065] According to the seventh gestalt of this invention, the sheet-like absorber whose configuration was stable can be obtained.
[0066] [0067] which can obtain the sheet-like absorber which has the concave heights which upheave to homogeneity by liquid absorption and swelling according to the eighth gestalt of this invention According to the ninth gestalt of this invention, the sheet-like absorber which has the concave heights which form a strong standing-up condition by liquid absorption and swelling can be obtained.
[0068] according to the tenth gestalt of this invention -- processing -- the sheet-like absorber which has the concave heights which are excellent proper and form a strong standing-up condition can be obtained.

[0069] According to the eleventh gestalt of this invention, since a sheet-like absorber bends backward by liquid absorption and swelling, the large anti-leak barrier of a standup can be formed.
[0070] According to the twelfth gestalt of this invention, the sheet-like absorber which has concave heights with the large level difference before and behind liquid absorption can be obtained.
[0071] according to the thirteenth gestalt of this invention -- processing -- the sheet-like absorber which is excellent proper and has concave heights with the large level difference before and behind liquid absorption can be obtained.
[0072] According to the 14th gestalt of this invention, the sheet-like absorber which has concave heights with the still larger level difference before and behind liquid absorption can be obtained.
[0073] According to the 15th gestalt of this invention, a sheet-like absorber with very few omission of SAP can be obtained.
[0074] According to the 16th gestalt of this invention, since P sheets are hydrophilicity and diffusibility, the sheet-like absorber which was excellent in absorptivity or diffusibility can be obtained.
[0075] Since Q sheet is formed with the supple ingredient according to the 17th gestalt of this invention, the sheet-like absorber which is easy to get used to the body can be obtained.
[0076] According to the 18th gestalt of this invention, since Q sheet is formed with the rigid high ingredient, it becomes possible to obtain the good sheet-like absorber of a standing-up disposition.

[0077] According to the 19th gestalt of this invention, since an anti-leak barrier can be formed with an absorber, the absorber product which the flexible elastic member for forming a leakproof system like the conventional absorber product etc. became unnecessary, and was excellent in the leakproof effect in the side edge section and the edge section can be obtained.
[0078] According to the 20th gestalt of this invention, it is suitable for the absorber product which does not necessarily need the quick rate of absorption of sanitary items, a urine picking liner, a light incontinence pad, etc., and the absorber product which prevented the leakage from the edges-on-both-sides section can be obtained.
[0079] According to the 21st gestalt of this invention, it is suitable for the absorber product with which quick rate of absorption, such as a disposable diaper, is demanded, and the absorber product which prevented the leakage from the edges-on-both-sides section can be obtained.
[0080] According to the gestalt of the 20th NI of this invention, it is suitable for the absorber product which does not necessarily need the quick rate of absorption of sanitary items, a urine picking liner, a light incontinence pad, etc., and the absorber product which prevented the leakage from a both-ends edge can be obtained.
[0081] According to the 23rd gestalt of this invention, it is suitable for the absorber product with which quick rate of absorption, such as a disposable diaper, is demanded, and the absorber product which prevented the leakage from a both-ends edge can be obtained.
[0082] According to the 24th gestalt of this invention, since a flare part is formed in a back bodice in facilities, absorber products, such as a disposable diaper which lessened that the skin and facilities contacted directly, can be obtained.
[0083] According to the 25th gestalt of this invention, since a discharge part and an absorber stick, absorber products, such as a urine pad with possible making body fluid absorb by the part which the absorber planned, can be obtained.

[Translation done.]

X. RELATED PROCEEDINGS APPENDIX

None.